

and DS tributary during or closely following a significant rainfall event to better determine the quantity of site contaminants that may be transported off-site. Also, samples of ditch sediments should be collected and analyzed to determine their metals content. Even if all metals released from the site were sorbed onto ditch sediments, it still constitutes a release to the environment and should be addressed.

Site surface water drainages were investigated per the approved RFI Work Plan. Although the ditch may receive "slugs" of site constituents during period of sufficient precipitation, it should be realized that these dynamics occur throughout the ditch system, not just immediately before surface water flows off site. For example, cadmium, which may or may not be "washed out" of the ditch at location DW-B, may have the opportunity to become sorbed to sediment at other areas in the on site drainage ditch system before migrating off site. As was the case for the previous comment, this issue is extremely speculative and cannot be proved or disproved based on available data. Even if surface water and sediment samples were collected off site (in the DS Tributary) following precipitation events, it could not be conclusively stated whether or not detectable concentrations of constituents were attributable to the Sodium Plant because of the additional contribution of constituents by neighboring industries. In addition, metals sorbed to ditch sediments would not constitute a "release" unless constituents were transported off of the facility property. As discussed in the meeting of May 9, the potential for transport of constituents via erosion and runoff of surficial soils to drainage ditches has been recognized and will be further addressed in the CMS report. Therefore, Section 6.7.2, page 6-38, paragraph 1 will not be altered to reflect this comment in the revised RFI report or the CMS Work Plan.

99. Section 6.7.3, Page 6-38, Paragraph 1: Please see preceding comment concerning contaminant transport and possible sorption onto sediments.

See comment number 98.

100. Section 6.7.4, Page 6-39, Paragraph 2: The last sentence should read "It is likely that the french drain system may intercept an unknown portion of the groundwater containing cadmium in the vicinity of the wastewater treatment ponds."

This sentence will be changed to "It is ~~unlikely~~ that the french system intercepts a portion of the groundwater containing cadmium in the vicinity of the wastewater treatment ponds."

101. Section 6.7.5, Page 6-39, Paragraph 1: Again, the last sentence should read "It is likely that the french drain system may intercept an unknown portion of the groundwater containing cadmium in the vicinity of the waste treatment ponds." For all SWMU's addressed in Section 6.7 with the statement that it is likely that the french drain system intercepts contaminated shallow groundwater, groundwater wells should be installed hydraulically downgradient from both the SWMU and french drain system. If analysis of groundwater samples from these wells showed elevated contaminant levels, then it is probable that the french drain system is not intercepting and capturing all of the contaminated groundwater migrating from the SWMU in question.

Monitoring wells were installed hydraulically downgradient from the Wastewater Treatment Ponds in all directions except east where further studies are planned (see Attachment 1). This issue of the french drain efficiency is only relevant if groundwater remediation is warranted.

102. Section 6.7, General Comment: For all SWMU's showing elevated metals concentrations in surface soil, the inhalation of dust containing metals originating from the shallow soils by on-site workers needs to be addressed.

Potential exposures to constituents present in site SWMUs to on site employees is not within the scope of the RFI, nor is its consideration



consistent with current federal guidance. In addition, USEPA and OSHA have an agreement that these potential types of exposures are to be regulated by OSHA. Therefore, potential exposure of on site employees to constituents in soil via inhalation of dust will not be addressed in the revised RFI, the CMS Work Plan, or the CMS report. The issue of exposure of on site workers is further discussed in comment numbers 124 and 127.

→ could be appropriate.  
not  
always

## SECTION SEVEN COMMENTS

103. Section 7.0, General Comment: The health and environmental assessment provided in Chapter 7 of the RFI Report attempts to identify "complete" exposure routes. A notable deficiency which occurs throughout the assessment is the reliance on questionable assumptions where definitive data are lacking. An example of the inclusion of questionable assumptions would be that off-site sources are the cause of contamination at the RMI site. Other assumptions included in the assessment are addressed in the specific comments. In most cases these assumptions result in the decision that exposure pathways are incomplete, and therefore, sampling results are not compared to applicable criteria.

As discussed in previous and subsequent responses, there is substantial evidence given in the RFI report which supports "questionable assumptions" used in the health and environmental assessment. See especially comment numbers 72, 73, 95, and numbers 110 through 115.

104. Section 7.0, General Comment: Overall, it appears that contaminants move off-site from some source through the drainage ditches along the perimeter of the RMI site. It would not be expected that these contaminants would remain in surface waters near the site due to their chemical/physical properties or transport off-site. Because contaminants could precipitate out and sorb to sediments, sediment exposures should have been addressed in the RFI. The aquatic species in the Fields Brook and DS tributary may be impacted by sediment contamination.

See comment number 140.

105. Section 7.0, General Comment: Very little information was provided concerning the activities of RMI personnel on-site and the potential for soil-related exposure for these workers and other populations in the vicinity of the site. Specific comments are provided concerning the



absence of such information. These comments may or may not be appropriate. However, they were included to demonstrate the importance of these data in evaluation of the health and environmental assessment.

See comment numbers 102, 124, and 127.

106. Section 7.0, General Comment: The conclusions derived from the health and environmental assessment are largely based on the absence of potential receptors or the lack of some component which has been deemed necessary to designate an exposure pathway as complete. It would seem that site conditions have caused contamination of environmental media above background levels or other appropriate health/environmental criteria levels. Groundwater levels for barium in shallow and deep water bearing zones were both higher than allowable MCL values for barium. Similarly, cadmium levels in the shallow groundwater exceed the promulgated MCL. The effects of soil and surface water contamination cannot be properly evaluated because soil-related dermal contact/inhalation exposure by humans, and the uptake or adverse effects of sediments for aquatic species were not addressed in the RFI.

See comment numbers 46, 73, and 110 through 115 for groundwater discussion; 102, 124, 127 for soil-related dermal contact/inhalation exposure discussion; and, 140 for effects of sediments to aquatic species discussion. In addition, it should be noted that "appropriate" criteria is the operative word. It is not believed to be appropriate, for example, to compare groundwater levels to MCLs if groundwater is not a drinking water source, and qualifies as a Class IIIA groundwater designation.

107. Section 7.0, Page 7-1, Paragraph 3: Constituent concentrations should also be compared to any applicable short-term or acute toxicity criteria such as one- or ten-day health advisory levels for drinking water.

Comparison to acute criteria is not appropriate, nor is it consistent with current RFI guidance. As discussed in the May 9 meeting, the Agency may deem it necessary to compare site constituent concentrations to acute levels when there appears to be an immediate threat to human health or the environment. This is clearly not applicable to the situation at the RMI Sodium Plant. In addition, comparison with drinking water criteria is not appropriate because neither site-related groundwater or surface water are drinking sources. Therefore, Section 7.0, page 7-1, paragraph 3 will not be changed for the revised RFI report, the CMS Work Plan, or the CMS report to reflect this comment.

108. Section 7.0, Page 7-2, Paragraph 3: Unless it can be firmly established that the volatiles result from an off-site source, on-site volatiles should be evaluated with respect to health and environmental criteria values.

As discussed in comment number 95, it has been firmly established during the RFI process that the volatile organics present at the site are the result of releases from off site sources. Therefore, on site volatiles will not be evaluated with respect to health and environmental criteria values in the CMS Work Plan or the CMS report.

109. Section 7.1.1, Page 7-3, Paragraph 1: Even if yields for wells are only at 117 gal/day, they could be used as an alternate water supply.

As discussed in Section 4.2.4.3 (and referenced in Section 7.1.1, page 7-3, paragraph 1), well yield must be greater than 150 gpd to provide for the needs of an averaged-size household according to USEPA guidance on groundwater classification. The fifth sentence in Section 7.1.1, page 7-3, paragraph 1 will be changed as follows in the CMS Work Plan: "Also, because of the low hydraulic conductivity of the till, yields for wells are very low. A typical yield for till wells was calculated at 117 gpd (see Section 4.2.4.3 of the revised RFI report), which is below the 150 gpd limit set by USEPA as being adequate to provide for the needs of an average-size household (USEPA, 1986a)."



110. Section 7.1.1, Page 7-3, Paragraph 1: The assumption that the lower bedrock water bearing zone is not affected is unsubstantiated. The description of sampling results for the bedrock water bearing zone (Section 6.1.2) indicate that barium exists at levels which exceed levels documented to occur naturally. Therefore, groundwater in the bedrock zone should be evaluated in the health and environmental assessment (HEA).

As discussed in comment numbers 72 and 73, the assumption that the lower bedrock water bearing zone is not affected by site activities was substantiated during the RFI process. Therefore, groundwater in the bedrock zone will not be evaluated in terms of a health and environmental assessment in the CMS Work Plan.

111. Section 7.1.2, Pages 7-5 through 7-7: It seems that the potential for migration of contaminants off-site exists both to the north and east, and to the south and west perimeters of the RMI site. Yet there is no definitive information to determine the extent of such migration. The potential for contaminant release and migration is based on questionable assumptions (i.e., no interchange occurs between the shallow and deep bedrock groundwater zones; discharge from the site to perimeter drainage areas is minimal; and a groundwater divide occurs to the southwest of the Area A landfill).

There is no description of the ultimate fate of water moving along the northeast portion of the site perimeter. Please state if there would be any receptors potentially exposed to contaminants in this discharge.

A great deal of data for various site media collected or generated during the RFI process has been evaluated and does constitute "definitive information" concerning site constituents and their potential to migrate off site. The potential for off site migration of constituents was addressed in the Health and Environmental Assessment where it was

relevant. In addition, as discussed in comment numbers 72 and 73, there is substantial evidence that there is no interchange between the shallow water table zone and the deeper bedrock zone. Although it is unknown to what extent the shallow groundwater is restricted from flowing off site by the drainage ditch to the south and west of the Area A landfill, as discussed in Section 4.2.4 of the RFI report, the shallow groundwater in the site vicinity meets the requirements of a Class IIIA groundwater (see comment number 46). In addition, no potential groundwater receptors have been identified which may be impacted by activities at the RMI Sodium Plant. Groundwater discharge to the site perimeter drainage ditches is believed to be minimal based on calculated discharge rates (0.05 to 0.5 gal/day, as stated on page 7-6). As discussed on page ES-10 of the RFI report and further discussed in Attachment 1 of this response, additional monitoring wells and piezometers have been recommended for the area to the north and east of the wastewater treatment ponds in order to more accurately define groundwater flow in these areas. However, as previously determined in the RFI process, no groundwater receptors which may be potentially impacted by the RMI Sodium Plant activities were identified (see comment number 39), and the groundwater at the site meets the requirements of a Class IIIA groundwater (see comment number 46). Therefore, no revisions relative to this comment will be made in the CMS Work Plan.

112. Section 7.1.3, Page 7-7, Paragraph 2: Please state which of the nine wells are domestic or municipal wells. Also, it should be verified that the domestic well located northeast of the plant is not used as a drinking water source.

As stated in Section 7.1.3, page 7-7, paragraph 2, there are few domestic wells and no municipal wells in the project site area. Therefore, the fourth sentence in this paragraph will be modified to read, "There are nine domestic wells within a 5 km radius of the RMI Sodium Plant;..." for the CMS Work Plan.



As discussed in comment number 39 and in the meeting of May 9, it is not considered necessary to verify that the domestic well located northeast of the plant is not used as a source of drinking water as it is not located downgradient to the RMI Sodium Plant.

113. Section 7.1.3, Page 7-9, Paragraph 2: The report should identify and address potential human receptors of the bedrock water. It has not been definitely proven that the site does not affect bedrock water quality, especially because barium concentrations of groundwater from the on-site bedrock wells exceed documented background concentrations.

As discussed in comment number 72 and 73, there is substantial evidence that the RMI Sodium Plant site does not affect bedrock groundwater quality. In addition, no groundwater receptors which may be potentially affected by RMI Sodium Plant activities were identified (see comment number 39). Therefore, potential human receptors of site constituents in the bedrock water will not be addressed in the CMS Work Plan or CMS report.

114. Section 7.1.4, Page 7-9, Paragraph 1: The contaminant levels in shallow groundwater should be compared to drinking water standards. Concentrations of cadmium and barium exceed background maximum contaminant levels. These data should be presented in the text of the health and environmental assessment.

As discussed in Section 4.2.4 of the RFI report, the shallow groundwater present in the till zone meets the requirements of a Class IIIA groundwater, i.e., groundwater that is not used (and that does not have the potential to be used) as a source of drinking water (see comment number 39). As such, it is not appropriate to compare constituent levels in the shallow groundwater to drinking water standards. Therefore, this comparison will not be conducted in the CMS Work Plan.

115. Section 7.1.5, Page 7-9, Paragraph 1: Although there presently are no receptors of shallow groundwater in the vicinity of the site, the potential for future users of the shallow groundwater needs to be addressed.

As previously discussed in comment numbers 39 and 114, the shallow groundwater in the vicinity of the RMI Sodium Plant site meets the requirements of a Class IIIA groundwater (groundwater that is not used and does not have the potential to be used as drinking water). Therefore, it is inappropriate to evaluate the potential for future users of the shallow groundwater, and this will not be evaluated in the CMS Work Plan.

116. Section 7.2.1.1, Pages 7-11 through 7-19: In addition to the constituent average of surface soils of an area being compared to background values, the highest value of a constituent in an area could have been compared to background values. This would not result in a high constituent value being "watered down" by a low constituent value when averaging.

RMI Company was requested by USEPA to collect additional surficial soils data from areas of the SWMUs, additional background surficial soils data, and to perform a statistical analysis with the results. The Student's t test, which is a statistical method historically and currently used in RCRA groundwater monitoring programs, uses the differences in means (i.e., averages) between background and test area samples to determine statistical significance. Means were therefore calculated to perform these statistical analyses and to assist in the interpretation of site data, not to "water down" constituent values. Therefore, the procedure used will not be modified for the CMS Work Plan or CMS report.

117. Section 7.2.1.1, Page 7-18, Paragraph 2: Because Areas B and C were defined as separate SWMU's, the selenium concentration of surficial soils in Area C that were significant over background should be addressed



separately. It should not be averaged with selenium concentrations from Area B to make the average selenium concentration of Areas B and C combined appear to be less significant.

The selenium concentrations in Areas B and C were addressed separately in Section 6.2.1 of the RFI report. In addition, on page 7-11, the constituents which were significant over background were summarized separately by SWMU, and Area C was noted as having selenium concentrations significantly higher than background. Areas B and C were considered collectively in portions of Section 7.0 because they are physically indistinguishable for one another, which was particularly relevant for estimates of potential erosion. They were not considered collectively in order to make selenium concentrations "appear less significant" in these areas. In addition, as stated in Section 7.2.1.1, page 7-18, the second complete paragraph, selenium in Area C should probably not be considered as significant over background because the background variance is very low due to the assumption that BMDL concentrations equal the detection limit, and only two of 12 background samples had detectable levels of selenium. Therefore, Section 7.2.1.1, page 7-18, paragraph 2 will not be modified to reflect this comment for the CMS Work Plan.

118. Section 7.2.1.1, Page 7-18, Paragraph 3: It should be noted that the assumption that BMDL concentrations equal the detection limit is "convenient" when averaging background concentrations. This may result in a higher than actual average background concentration. When sample concentrations are compared to the higher background average, it may result in the sample not being considered contaminated because the difference between the sample concentration and the averaged background would be smaller.

The use of detection limits for non-detectable data is, in fact, not "convenient"; rather, it is highly conservative as the actual sample results may be anywhere between zero and the detection limit. In

not for background samples.  
(2.5.97. write)

addition, this assumption is widely used in the RCRA groundwater monitoring and enforcement programs, and is recommended in many USEPA guidance documents. It is not technically defensible or appropriate to apply one method to averaging background data and another for sample data. Therefore, Section 7.2.1.1, page 7-18, paragraph 3 will not be altered to reflect this comment for the CMS Work Plan.

119. Section 7.2.1.2, Pages 7-19 to 7-22: The preceding comment could also hold true for subsurface soils.

See comment number 118.

120. Section 7.2.1.1, Page 7-24, Paragraph 2: Background soil samples need to be collected in the area around the site and analyzed for arsenic concentrations before the statement can be made that arsenic levels in the surface and subsurface soils on site are probably natural to this area of Ashtabula County. It is possible that the consistent arsenic concentrations throughout the subsurface is the result of leaching by rainwater carrying the arsenic to deeper intervals. As stated on Page 7-31, arsenic has the least potential for sorption or attenuation onto soils and therefore, could migrate consistently deeper in solution than possible for other constituents.

Extensive background soil samples were collected at the project site (and analyzed for arsenic among other constituents) per request of USEPA and subjected to statistical analyses. Although it may be possible that arsenic concentrations throughout the subsurface is the result of leaching by rainwater carrying arsenic to deeper intervals, there are numerous other explanations for the consistent levels of arsenic observed at depth. These explanations include natural geologic processes and residuals from the agricultural use of arsenic-containing pesticides (as discussed in the RFI report) as well as the aerial deposition of fly ash from nearby incineration of coal at the local power plants. However, as



discussed in the meeting of May 9, because these explanations are extremely speculative and because this comment appears to be a rhetorical point, further discussion will not be provided in the CMS Work Plan.

121. Section 7.2.2.2, Page 7-32, Paragraph 2: In Area G, soil concentrations of barium and lead are also higher than background at the 17.3 to 18.0 foot level.

The distribution of constituents in Area G was discussed at length on pages 7-21, 7-22, and is shown on Figure 7-2 (page 7-23). In these discussions it was noted that concentrations of lead, barium, and cadmium increased at the 17.3 to 18 ft depth. Paragraph 2 on page 7-32 is only a general discussion of the overall trend for surficial soils to show a decrease in concentrations between the surficial and first subsurface soil layers. Because the distribution of constituents in Area G were specifically discussed on the pages references, it will not be further discussed in Section 7.2.2.2, page 7-32, paragraph 2 in the CMS Work Plan.

122. Section 7.2.2.2, Page 7-32, Paragraph 2: The report states that the low concentrations of site constituents detected in surface water samples indicate that leaching from surficial soils to on-site surface water is not occurring to a significant degree. However, leaching of site contaminants and subsequent runoff to surface water (ex. drainage ditch) may be accelerated during heavy rainfall and flooding events. Transport of contaminants in solution to the drainage ditch from runoff would not occur continuously but only during periods of sufficient precipitation. The ditch would receive "slugs" of site contaminants that may not be detected in water samples because 1) contaminants may have been transported off-site by waters in the ditch, and/or 2) contaminants have re-adsorbed to sediments in the ditch.

Ditch water samples should be collected during or closely following a significant rainfall event to better determine the quantity of site



contaminants that may be transported in solution (and in the sediments) to the ditch. Sediment samples should be collected from the ditch for metals analysis to determine whether adsorption of metals to the sediments has occurred from runoff to the ditch.

See comment number 98.

123. Section 7.2.2.2, Page 7-35, Paragraph 2: Please state if there is a reference for multiplying maximum soil concentrations of contaminants by a factor of 20.

The factor of 20 was used because it is employed as the dilution factor in the analytical method for EP Toxicity. As discussed in Section 6.2.2, page 6-14, paragraph 2 (and referenced in Section 7.2.2.2, page 7-35, paragraph 2), these "EP Toxicity Equivalent factors" were used to choose soil borings to be analyzed for EP Toxicity; and, based on the conservative assumption that, if the entire sample were 100 percent leachable, the extract concentrations would be less than these EP Toxicity Equivalent factors. The first sentence in paragraph 2 on page 6-14 will be modified to read: "The metal concentrations were compared to EP Toxicity Equivalent factors (EP Toxicity Maximum Contaminant Concentration (MCC) multiplied by the analytical dilution factor of 20)." to clarify the use of the factor of 20 for the CMS Work Plan.

124. Section 7.2.2.2, Page 7-37, Paragraph 3: Although no receptors were identified in the immediate site vicinity, erosion losses due to wind should be addressed because of the presence of on-site employees.

See comment number 102. Also, as stated in this comment, no potential receptors were identified in the site vicinity and potential erosion losses due to wind would provide little beneficial information in relation to exposure scenarios. Therefore, Section 7.2.2.2, page 7-37, paragraph 3 will not be modified for the CMS Work Plan. However, potential wind erosion losses will be addressed in the CMS Work Plan.



125. Section 7.2.2.2, Page 7-40, Paragraph 2: Please justify using  $M=0.30$  for slopes of 1 to 3% in the equation.

Site slopes were calculated using site topographic maps. All areas had slopes ranging from 1 to 3 percent. For these slopes, the reference cited in the RFI report (Wischmeier and Smith, 1978) uses a value of 0.3 for M. It will not be necessary to modify Section 7.2.2.2, page 7-40, paragraph 2 for the CMS Work Plan because the reference for the M value has already been cited.

126. Section 7.2.2.2, Page 7-44 to 7-47: Calculations of barium and lead in subsurface soils (17.3 to 18.0 feet) were not attenuated from levels found in surface soils in Area G.

See comment number 121.

127. Section 7.2.2.2, Page 7-47, Paragraph 2: Because the majority of the highest levels of contaminants were detected in surficial soils (as opposed to subsurface soils), a more detailed discussion of the potential for wind erosion should be included in the health and environmental assessment. A description of ground cover, site activities, and site personnel should be provided. Site activities such as vehicle travel over contaminated soils could result in the generation of fugitive dusts from contaminated areas. ✓

As discussed in comment numbers 102 and 124, exposures to RMI personnel are not relevant in the context of an RFI, and no other receptors were identified in the site vicinity in the RFI report. Therefore, a description of ground cover, site activities, and site personnel is not necessary. In addition, vehicular traffic is minimal over the SWMUs and off site releases via wind erosion are not expected. Therefore, Section 7.2.2.2, page 7-47, paragraph 2 will not be modified for the CMS Work Plan.

Not true for  
soils.

128. Section 7.2.3, Page 7-48, Paragraph 1: If site conditions were conducive to wind-blown dusts, the resident described in the vicinity of the site could be subject to exposure. Similarly, no description of the activities of site personnel has been provided. More information should be included to demonstrate that workers on the site are not exposed through dermal contact with contaminated soils or inhalation of fugitive dusts. ✓

See comment numbers 102, 124, and 127.

129. Section 7.2.4, Page 7-49, Paragraph 1: If RMI personnel or residents near the site are subject to exposure to contaminated soils or dusts, health-based criteria for soils should be considered.

See comment number 102, 124, and 127.

130. Section 7.3.1.1, Page 7-54, Paragraph 2: The results of pond water sampling during the RFI should be provided in this section (rather than referring to the previous section).

All results of sampling activities were consistently reported in Section 6.0 of the RFI report (Contaminant Release Assessment). It would be inappropriate to treat the results of the pond water sampling differently from other media sampling results and this practice will not be modified for the CMS Work Plan.

131. Section 7.3.1.2, Page 7-57, Paragraph 1: Please provide more information concerning the "abandoned pond". Please state if the abandoned pond was used for any RMI activities.

The "abandoned pond" is the surface impoundment located immediately east of the closed landfill that has been used for holding leach brine. It is discussed in detail in Section 5.2.3.1. The abandoned pond is mentioned



in Section 7.3.1.2, page 7-57, paragraph 1 only to indicate where the drainage area is believed to originate and it is unnecessary to modify this paragraph for the CMS Work Plan.

132. Section 7.3.1.2, Page 7-57, Paragraph 1: If surface water north of the drainage ditch is expected to flow to the north of the site ultimately to Lake Erie, then samples of surface water and possible sediment north of the on-site divide should be collected and analyzed.

Site drainages to the north are only stormwater runoff conveyances, and in the past have been observed to be dry unless a significant precipitation event is occurring. It was recommended in the RFI report (Page ES-10), that the area <sup>S.N.E.</sup> north and east of the site be further evaluated. Additional work recommended for these areas of the site is further addressed in Attachment 1. The results of these additional studies will further define the potential migration of constituents in these areas. As this information will not be available before the CMS Work Plan is prepared, it will not be addressed in the CMS Work Plan.

133. Section 7.3.1.2, Page 7-57, Paragraph 2: Ditch sediment samples should have been collected during the RFI.

See comment number 98.

134. Section 7.3.1.2, Page 7-58, Paragraph 3: The possible source of zinc in the surface water sample (DW-E) needs to be more adequately addressed if an off-site source is postulated.

As discussed in Section 7.3.1.2, page 7-58, paragraph 3, the presence of zinc in sample DW-E suggests contribution from an off site source. It is likely that runoff and erosion from other industrial facilities to the DS Tributary upstream (east) of the RMI Sodium Plant have contributed concentrations of zinc at sample location DW-E. However, it is not the

intent of the RFI to evaluate off site sources (i.e., the purpose of the RFI is to evaluate releases from on site SWMUs) and, therefore, paragraph 3 on page 7-58 will not be modified for the CMS Work Plan.

135. Table 7-19, Page 7-63: Though collected during a previous investigation, the data in this table indicate that site contaminants have migrated from some on-site source to the surface water ditches. The contaminants would likely be found in the sediments because of their sorption properties.

As mentioned in comment number 134, it is likely that runoff and erosion from industrial facilities to the DS Tributary upstream of the RMI Sodium Plant contributes concentrations of constituents to the portion of the tributary that is present on Sodium Plant property. In addition, the DS Tributary downstream of the RMI site receives plant discharges (as well as erosion and runoff) from a variety of industries in the area. Table 7-19 serves to illustrate that constituents are being sorbed to sediments. However, it does not serve to indicate that RMI has solely been the source of those constituents. Therefore, Table 7-19, and discussions relating to it, will not be modified for the CMS Work Plan.

136. Section 7.3.2.1, Page 7-64, Paragraph 1: No sampling or discussion was presented about potential contaminant releases along the drainage ditches to the north and east of the wastewater treatment ponds. Shallow groundwater concentrations for contaminants were highest in these areas (Areas D and G). If the wastewater ponds recharge the groundwater which then discharges to these drainage ditches, it is not appropriate to exclude their potential effects from the health and environmental assessment.

As discussed in Section 7.3.2, page 7-64, paragraph 1, the wastewater ponds appear to be recharging shallow groundwater which, in turn, may be discharging to site surface water ditches. The surface water pathway is considered to be a primary pathway of concern at the RMI Sodium Plant and has not been excluded from the health and environmental assessment. In



addition, it was recommended in the RFI report (page ES-10) that additional investigations be performed in the areas north and east of the plant. Additional work recommended for this area is further described in Attachment 1 and will serve to further define potential effects of these ditches to health and environment. As this information will not be available before the CMS Work Plan is prepared, it will not be included in the CMS Work Plan.

137. Section 7.3.2.1, Page 7-64 and 7-65: Please state if this is an acceptable method for determining the sorption of a compound between water and sediments.

The expression of concentrations of constituents in different media as ratios is widely practiced. This is, in fact, the definition of a partitioning coefficient. These expressions of constituents may therefore be viewed as "field" partitioning coefficients, because actual field-measured values were used. Therefore, Section 7.3.2.1, pages 7-64 and 7-65 will not be modified for the CMS Work Plan.

138. Section 7.3.2.3, Page 7-76, Paragraph 2: Table 7-19 does not indicate that all contaminants diminish considerably with distance from the RMI site. Chromium and nickel concentrations are maintained or increase from stations 214 to 024.

See comment number 135. In addition, Section 7.3.2.3, page 7-76, paragraph 2, is only a general summary of observations concerning USEPA sediment data for the DS Tributary. However, the second sentence in this paragraph will be modified to read "..., it appears that concentrations of most constituents in the stream sediment diminish considerably with distance from the RMI property." for the CMS Work Plan.

139. Section 7.3.2.3, Page 7-76, Paragraph 2: The report states that "wash out" of sediments on-site to points downstream is not expected to be significant. However, "wash out" of sediments would be significant

during periods of heavy rainfall and flooding resulting in increased flow velocity and discharge in the drainage ditches and DS tributary off of the site.

See comment numbers 97 and 98.

140. Section 7.3.5, Page 7-81, Paragraph 3: Because sediments have not been analyzed during the RFI, it cannot be conclusively stated that susceptible aquatic species would not be impacted by releases from the RMI site.

There were no sensitive aquatic species, threatened or endangered species, or critical habitats in the DS tributary or Fields Brook identified in the RFI report. In fact, it is doubtful that significant numbers of any aquatic species exist in these streams, and certainly, no aquatic biota were observed in the on site drainage ditches during the RFI. In addition, even if sediment data had been collected and analyzed during the RFI, it still could not be conclusively stated that aquatic species had or had not been impacted via activities from the RMI Sodium Plant, i.e., there are no aquatic toxicity data for sediments, nor does the RFI process define action levels for sediments. As discussed in the meeting of May 9, the potential for constituents in soils to be transported via erosion to the DS Tributary (and ultimately to Fields Brook) has been identified and will be further addressed in the CMS report (see also comment number 98). Therefore, Section 7.3.5, page 7-81, paragraph 3 will not be modified for the revised RFI report or the CMS Work Plan.

Does it  
matter  
still a  
concern?

141. Section 7.4, Page 7-82, Paragraph 1: The results provided by an HNu photoionizer do not provide adequate evidence for determining whatever organic vapors and gases exist on site. A more sophisticated prolonged air monitoring procedure would be required to confirm whether organic site constituents occur as a result of site conditions.



As previously discussed (see comment number 15), chlorinated solvents have never been used at the RMI Sodium Plant. The organics detected on site during the RFI are due to an off site source, and are not related to the RMI SWMUs. Therefore a "more sophisticated, prolonged air monitoring program" is not justified, and Section 7.4, page 7-82, paragraph 1 will not be modified for the CMS Work Plan.

142. Section 7.4, Page 7-82, Paragraph 1: The fugitive dust scenario requires further evaluation before it can be discounted as a potential exposure route for nearby populations or on-site RMI personnel.

See comment numbers 102, 124, and 127.

The following comments were prepared by USEPA Region V and were noted in Enclosure II as Additional Comments to the RFI report.

143. Section 1, Page 1-2: The text states: "The proposed amendments were approved verbally by the U.S. EPA."

This statement should be clarified. The proposed amendments were implemented without a formal U.S. EPA approval due to a misunderstanding. However, the status of the RFI implementation was clarified to the U.S. EPA on September 16 and 23, 1988. Some changes to the amendments were requested by the U.S. EPA as follows:

Reconsider use of Teflon or stainless steel wells (as opposed to PVC) in areas where organics have been detected in groundwater;

Consider broader metal scans at additional locations;

A more statistically rigorous development of background metals levels.

The second paragraph on page 1-2 will be modified for the revised RFI report as follows:

"...This report included the results of the geophysical survey, proposed amendments to the Work Plan, and clarified field methodologies. The proposed amendments were approved verbally by USEPA. However, in September 1988, changes to the proposed amendments were requested by the USEPA including reconsidering the use of Teflon® or stainless steel wells (as opposed to PVC as suggested in the Interim Report) in areas where organics have been detected in groundwater. In addition, it was requested that broader metal scans be conducted at additional locations at the site. A more statistically rigorous development of background metals levels was also requested for surficial soils at the site."



144. Section 3.7, Page 3-10: This section states that certain wells were subjected to organic priority pollutant scans. No cyanide results are mentioned in Section 6 of the report, and no nickel results are reported. In addition, as discussed in a September 23, 1988, phone conversation between the U.S. EPA and Aware Corporation, all groundwater samples should have included nickel and cyanide.

The priority pollutant scans of the groundwater did not include nickel. Analysis for cyanide was done on wells 3S, 4D, and 4S in January 1989. Future groundwater sampling will include cyanide and nickel (see Attachment 1).

145. Section 4.2.2.2, Page 4-18, Paragraph 2: The statement is made that the unconfined water table zone receives recharge predominately through direct infiltration of precipitation. This seems to support an argument for performing groundwater sampling for the shallow wells in the spring and summer to account for potential seasonal variation in sampling results.

It was stated in the approved Work Plan that groundwater would be sampled twice. At the nearby Extrusion Plant, the water table elevations generally only vary by 1 to 3 ft throughout the year. Therefore, significant seasonal variations in the water table elevations and constituent concentrations at the Sodium Plant are not expected to occur.

146. Section 5.2, Page 5-1, Paragraph 1: "There is no history of or potential for release from the south chute waste pile, burning room, or the sulfuric acid neutralization system--. Therefore, these units were not included in the RFI".

These statements should be revised in accordance with the following comments: "Waste management activities at the south chute waste pile and

burning room are regulated through the provisions of a RCRA Part B permit. There is no known history of uncontrolled releases at these units. Therefore, these units were not included in the RFI."

An integrity assessment is suggested to demonstrate that the sulfuric acid neutralization tank system has no potential for causing releases.

These statements will be revised as recommended in the revised RFI report. Discussion of integrity assessment for the sulfuric acid neutralization tank is contained in Attachment 1 of this response. This recommendation will be included in the Executive Summary, page ES-10, of the revised RFI report.

147. Section 5.2, Page 5-2 & Section 5.2.3.1, Page 5-11: The abandoned pond east of the closed landfill is not defined as a SWMU. It should be redefined as an area of concern, meaning an area involving product storage that could have resulted in routine and systematic releases of hazardous constituents to the environment.

The abandoned pond was used only for a 1 to 2 year period (from 1956 to 1957 or 1958 by Electromet for holding leach brine) and for a six month period in 1981 by RMI Sodium, also for holding leach brine. The leach brine did not contain hazardous constituents (with the exception of low levels of metals that may naturally occur) and a routine and systematic release of hazardous constituents is unlikely to have occurred. Therefore, this unit will not be redefined as an area of concern in the revised RFI report.

148. Section 5.2.2.3, Page 5-10: Statements regarding the regulatory status of the burning room need to be revised. This unit was permitted as an incinerator by the U.S. EPA. Omit the following sentence: "This thermal treatment unit is exempted from regulatory requirements...."



Also, omit the next sentence. Instead it should be stated that emissions from the burning room are regulated under the Clean Air Act.

Revisions will be made as suggested in the revised RFI report.

149. Section 5.2.2.4, Page 5-11: Add to this section: This unit is exempt from RCRA permitting requirements in accordance with 40 CFR 264.1(g)(6). Also, see comments for page 5-1 regarding integrity testing of the system.

The sentence will be added in the revised RFI report.

150. Section 6.2.1, Page 12: Describe follow-up work planned based on the findings of zinc, beryllium, and copper.

There is no follow-up work planned based on the findings of zinc, beryllium, and copper in the soil. All results were within the typical/background concentrations found in natural soils (Lindsay 1979, Dragun 1988, and Shacklette and Boerngen, 1984).

151. Section 6.4, Page 6-27: Page 6-27, Section 6-4. A statement regarding HNu readings was made that "No measurements above background levels were observed". This statement appears to be contradicted by the last paragraph on page 6-28, beginning: "On August 18, 1988...." Please clarify.

This statement refers to HNU readings on ambient air and not soil head space screening or screening conducted in the vicinity of the borehole while drilling. This statement will be revised as "No measurements of ambient air above background levels were observed." for the revised RFI report.

152. Chapter 7. Health and Environmental Assessment. This chapter does not recommend that a Corrective Measures Study (CMS) be conducted. Instead, the chapter contains a variety of exposure assumptions, and concludes

that where human exposure cannot be presently demonstrated, no further action is required. Where it has been assumed that exposures may occur, a variety of criteria are applied to determine that none of these potential exposures are significant.

Current U.S. EPA policy, as described in the RFI Guidance, Chapter 8, is that a CMS will be conducted for areas at a facility where "action levels" are found to be exceeded during RFI sampling. "Action levels" are specific health and environmental criteria developed by the U.S. EPA, to be applied to the RCRA corrective action process. The RFI guidance does allow a facility to present data, based on site-specific factors, to support a determination that no further action is necessary. However, imposing an RFI through permit conditions establishes a strong presumption that a CMS will be required if action levels are exceeded. Although additional RFI sampling is required to complete the RFI at the RMI Sodium Plant, the data collected to date clearly establish that a CMS is necessary for certain areas of the facility, as described below.

#### Inorganic Constituents

Inorganic constituents were measured during RFI sampling above action levels for the following media in the following locations:

<u>Media</u>	<u>Constituents</u>	<u>Location</u>	<u>Measured Levels</u>	<u>Action Level</u>
Groundwater	Barium	Well 3 S	1,200 ppb	1,000 ppb
		Well 6 S	1,500 ppb	1,000 ppb
		Well 8 S	1,900 ppb	1,000 ppb
		Well 4 D	6,800 ppb	1,000 ppb
		Well 5 D	6,210 ppb	1,000 ppb
		Well 9 D	1,400 ppb	1,000 ppb
		Well 11 D	18,000 ppb	1,000 ppb
		(Background)		



	Cadmium	Well 4 S	14.3 ppb	10 ppb
		Well 6 S	25.7 ppb	
		Well 8 S	11.7 ppb	
Shallow soils	Cadmium	Area B avg.	199 ppb	40 ppb
	Lead	Area B avg.	355 ppm	24.9 ppm
		Area C avg.	80.7 ppm	24.9 ppm
		Area G avg.	29.1 ppm	24.9 ppm
		Area F avg.	87.5 ppm	24.9 ppm
	Arsenic	Area A avg.	14.6 ppm	12.0 ppm
		Area B avg.	21.7 ppm	12.0 ppm
		Area C avg.	18.4 ppm	12.0 ppm
		Area G avg.	17.6 ppm	12.0 ppm
		Area F avg.	18.5 ppm	12.0 ppm
Surface Water	Cadmium	DW-B	37.9 ppb	9.5 ppb

Therefore, based on RFI data to date, a CMS is required for remediation of barium and cadmium contamination in groundwater, including an evaluation of methods to control SWMUs that are potential sources of additional groundwater contamination. A CMS is also required for soil contamination for the following constituents in the following areas: Cadmium contamination at Area B; lead contamination at Areas B, C, G, and F; arsenic contamination at Area A, B, C, F, and G. In addition, a CMS is required for cadmium contamination in surface water at the location of sample DW-B.

### Organic Constituents

Organic constituents were measured during RFI sampling above action levels for the following media in the following locations:

<u>Media</u>	<u>Constituents</u>	<u>Location</u>	<u>Measured Levels</u>	<u>Action Level</u>
Groundwater	1,1,2,2-Tetrachloroethane	1 S	37.7 ppm	1.75 ppb
	1,1,2,2-Tetrachloroethane	2 S	33,100 ppm	
	Tetrachloroethylene	1 S	46.3 ppm	7.0 ppb
	Tetrachloroethylene	2 S	16,400 ppm	
	Trichloroethylene	1 S	63.1 ppm	5 ppb
	Trichloroethylene	2 S	23,000 ppm	
	Hexachlorobutadiene	1 S	83 ppb	4.5 ppb
	Hexachlorobutadiene	2 S	3,200 ppm	



	Hexachloro-			
	ethane	1 S	156 ppb	25 ppb
	Hexachloro-			
	ethane	2 S	18,000 ppm	
	Hexachloro-			
	benzene	2 S	19,000 ppm	0.02 ppb
	Hexachloro-			
	cyclopenta-			
	diene	2 S	761 ppm	200 ppb
Shallow soils	1,1,2,2-			
	tetrachloro-			
	ethane	2 S	114 ppm	35 ppm
	Hexachloro-			
	benzene	2 S	2.2 ppm	0.4 ppm

Therefore, based on RFI data to date, a CMS is required for remediation of groundwater contaminated with the above-listed organic constituents, including an evaluation of methods to control SWMUs that are potential sources of additional groundwater contamination. In addition, alternatives should be presented for limiting additional contamination from suspected off-site sources of contamination. A CMS is also required for soil contamination at the area of samples labeled 2S.

NOTE: The following attachment was given in the USEPA's comments to explain the basis for the proposed action levels.

## ENCLOSURE IV

## Source of Action Levels

Media	Constituent	Action Level	Source of Action Level
Groundwater	Barium	1,000 ppb	MCL
	Cadmium	10 ppb	MCL
Shallow soils	Cadmium	40 ppb	Health based level
	Lead	24.9 ppb	Local background
	Arsenic	12.0 ppb	Local background
Surface water	Cadmium	9.5 ppb	(Ohio Water Quality Standard calculation)
Groundwater	1,1,2,2, tetrachloroethane	1.75 ppb	Health based level
	Tetrachloroethylene	7.0 ppb	Health based level
	Trichloroethylene	5 ppb	MCL
	Hexachlorobutadiene	4.5 ppb	Health based level
	Hexachloroethane	25 ppb	Health based level
	Hexachlorobenzene	0.02 ppb	Health based level
	Hexachlorocyclopentadiene	200 ppb	Health based level
Shallow soils	1,1,2,2-tetrachloroethane	35 ppm	Health based level
	Hexachlorobenzene	0.4 ppm	Health based level



As discussed in the May 9 meeting, the proposed action levels were initially reviewed and the following questions/comments were posed to the USEPA to resolve regarding the proposed levels:

- The statistical analyses of the surficial soil samples were not considered in the determination of the SWMUs which exceeded the proposed action levels. If the statistics had been considered, the following areas would not exceed background, and therefore should not be considered for potential remediation: Areas C and G for lead and Area A for arsenic.
- In Enclosure II, there is an error in the measured level of cadmium in Area B shallow soils (should be 199 ppm, not ppb), and it is assumed that the units for the proposed action level are also in error (should be 40 ppm, not ppb). In addition, in Enclosure IV, which lists the basis for the action levels, the units on the proposed action levels for shallow soils for cadmium, lead, and arsenic are believed to also be in error (should be ppm, not ppb).
- How was the surface water action level derived?
- Action levels for bedrock wells are not appropriate (wells 4D, 5D, 9D, 11D) as it has been demonstrated in the RFI that deep groundwater is not being affected by site activities at the RMI Sodium Plant.
- All soil action levels given are for shallow soils. While it is agreed that deeper soils should not be considered because there are no exposure scenarios which would bring receptors into contact with deep soils, does this omission mean that deep soils need not be further considered, or was it an oversight?
- Action levels for organics are not appropriate because it has been demonstrated in the RFI that the organics originate from an off site source, not from RMI Sodium Plant activities.

- Please define the Agency's position on the relationship between "action levels" and "cleanup levels" for remediation.

The following paragraphs briefly summarize the discussions regarding action levels at the May 9 meeting and subsequent correspondence between the USEPA and RMI. After this summary, RMI's response to the proposed action levels is given. Upon presentation of the remarks noted in the above bullets regarding the proposed action levels at the May 9 meeting, the USEPA indicated to RMI that they would investigate some of the noted discrepancies and prepare a letter response to RMI before RMI's formal response to the Agency's comments were due. Also, the relationship of action levels to cleanup levels was discussed at length during the May 9 meeting. It was concluded by the Agency that action levels are used to determine the need for a CMS, and that as such, the levels were not negotiable. However, the Agency did distinguish between action levels and cleanup levels, and noted that the levels are not necessarily the same, and that "reality would not be ignored in selecting final remedies for the site". As such, site specific cleanup levels are determined on a case-by-case basis, but the relevant issues should be debated in the CMS, not the RFI. The USEPA agreed to reiterate this in a letter to RMI following the May 9 meeting. In addition, the applicability of proposed "Subpart S" regulations to the RMI Sodium Plant RFI/CMS were discussed; however, no definitive conclusions were made regarding the exclusive applicability of Subpart S to the current Sodium Plant investigation.

During the May 9 meeting, it was agreed that formal responses to all of the Agency's comments would be prepared and submitted to the USEPA by June 12, 1990. In light of the discussions described above, it was also agreed that the existing format of the RFI report would be revised, and that a CMS should be prepared. It was agreed that the existing RFI report would be revised to include only Sections 1.0 through 6.0, and would be due to the USEPA by June 29, 1990. It was further agreed that the existing Health and Environmental Assessment (Section 7.0), with



appropriate revisions, would be a part of the CMS, and that a revised Section 7.0 would be submitted with the CMS Work Plan, also due to the USEPA (with Tasks IA and IB) by June 29, 1990.

In accordance with the discussions regarding action levels at the May 9 meeting, the USEPA prepared a draft letter response to Richard Mason of the RMI Company on May 24, 1990 to resolve issues requiring further clarification by the USEPA. In this letter, the USEPA discussed the following: the units for the cadmium measured and action levels were in error, and should be ppm; the statistical analyses for surficial soils were considered, and action levels for surficial soils for Area G (for lead) and Area A (for arsenic) were agreed not to be appropriate in light of the results of the statistical results. However, an additional area, Area C for lead, was included for consideration for surficial soils because of large sample variances in the statistical analyses. In addition, two areas for subsurface soils were added to be considered and proposed action levels were presented: Area G (for cadmium and lead), and Area D (for lead). The letter also stated that it was Agency policy to employ a direct contact (ingestion) scenario for soils considered at the "near subsurface" (i.e., 2 to 3 ft), and to evaluate contamination at greater depths in terms of potential transfer to groundwater.

The USEPA's May 24, 1990 letter also noted that the omission of the consideration for deep soils and action levels was an oversight. The letter further noted, however, that no action levels exist to evaluate deep soils, and that the issue may require further evaluation. It was suggested that a discussion involving  $K_d$  values may be used, but that the  $K_d$  values should be measured, not based on literature values. Finally, the letter presented an explanation on how the surface water action level for cadmium (9.5 ppb) was derived, and that it was based on the assumption that the use designation for the Fields Brook Tributary applied to the on site drainage ditch.

In light of the discussions regarding action levels at the May 9 meeting and subsequent correspondence with the USEPA, RMI has formulated the following general response which will be reflected in the pending CMS Work Plan (with previous Section 7.0 revisions) and the CMS report. RMI deems it significant to reiterate that the USEPA has agreed that action levels are not cleanup levels, and that numerical estimates designated as action levels will not automatically set a precedent for cleanup levels at the site. As was discussed and concurred upon during the May 9 meeting, action levels are used by the Agency to determine whether or not a CMS is needed, and if so, what areas/SWMUs the CMS should address. Conversely, cleanup levels are applied, as appropriate, to remedial alternatives within the context of the CMS.

A CMS was not recommended in the RFI because no human or environmental exposure pathways were identified to currently exist which would bring receptors into contact with media containing site constituents at levels of concern; and/or the appropriateness of applying certain criteria to some pathways was questioned. At this time, however, RMI has agreed to prepare a CMS to address certain areas which were identified in the RFI as meriting further evaluation.

RMI perceives that the USEPA would prefer to have the proposed action levels (discussed above) incorporated into the revised Section 7.0 (in the CMS Work Plan) to preface all pending work performed as a part of the CMS. However, RMI has a number of reservations regarding some of the action levels, which are outlined below, by medium:

#### Groundwater

An action level for barium in selected shallow and deep wells was proposed by the USEPA, and an action level for cadmium in selected shallow wells was proposed by the USEPA. In addition, action levels for organic constituents were proposed for selected shallow wells.



Action levels for organics are not appropriate as it has been demonstrated that the organics at the RMI Sodium Plant originate from off site. A comparison of action levels to concentrations of constituents in deep wells is not considered appropriate because it has been demonstrated that groundwater quality in the deeper water-bearing zone is not being affected by Sodium Plant activities. Furthermore, because it has been demonstrated during the RFI process that shallow site groundwater meets the requirements of a Class IIIA designation, a comparison of measured groundwater concentrations to action levels based on MCLs is not appropriate. Therefore, none of the proposed groundwater action levels will be reflected in the CMS Work Plan or the CMS report.

#### Shallow/Near Subsurface Soils

Action levels were proposed for inorganics in shallow soils by the USEPA for the following SWMUs and constituents: cadmium: Areas B and G; lead: Area B, C, D, F, and G; arsenic: Areas B, C, G, and F. Action levels were also proposed for some organic constituents in shallow soils.

As previously discussed, action levels for organics are not appropriate, as it has been demonstrated that the organics at the Sodium Plant site originate from off site. The proposed action levels for inorganics in shallow soils are accepted given that it is understood that (as discussed above) the action levels merely serve to identify that these areas and constituents should be further addressed in the CMS Work Plan and CMS report.

#### Surface Water

One action level was proposed by the USEPA: for cadmium at location DW-B. Although RMI does not consider the use designations for the Fields Brook Tributary are appropriate to apply to the on site drainage ditch system, this action level is accepted. However, as noted above, this action

level is only accepted given that it is understood that the action level serves to identify this area (near DW-B) and constituent as needing to be further addressed in the CMS Work Plan and CMS report.

#### Deep Soils

No action levels for deep soils were proposed by the USEPA; however, it was noted in the May 24, 1990 letter to Richard Mason that deep soils should be evaluated in terms of their potential to transfer constituents to groundwater. The letter also noted that such an evaluation should employ measured  $K_d$  values instead of literature values.

An in-depth evaluation of the potential for deep soils to act as a potential source to groundwater via leaching was previously given in the RFI, in Section 7.2.2. Literature values of  $K_d$  were employed in this evaluation. Although it is "ideal" that measured  $K_d$  values be used in such an evaluation, this is not consistent with many of the current federal guidance documents, nor is it practical. The measurement of  $K_d$  values is not widely practiced by soils testing laboratories, and those who do perform the test do so on an experimental, not a production basis. In addition, the cost of a single measurement is prohibitive. It is doubtful that if a reliable measurement of  $K_d$  could be performed for site soils, it would provide information which would change the conclusions made in Section 7.2.2 of the RFI based on literature values. As stated in Section 7.2.2 of the RFI, the predictions of constituent mobility made on the basis of literature  $K_d$  values (and other factors relevant to the discussion) have been substantiated by site measurements of constituents in groundwater, soils, and surface water. In particular, the EP Toxicity test for cadmium and lead was applied to subsurface soil samples having the highest measured values of barium, cadmium, and lead in subsoils collected from the site. These results of the tests indicated that neither cadmium or lead is likely to leach from the subsoils (barium was not measured), i.e. the EP Toxicity Limits were not exceeded for any sample. Also, as discussed above, groundwater action levels are not



appropriate for this site. Based on the previously presented evaluation and data, it is therefore considered unnecessary to further evaluate the potential for deep soils to act as a source for groundwater contamination, and no action levels will be reflected in the CMS Work Plan or CMS report.

153. Corrective Measures Study (CMS) Plan. Permit Condition V.C.2 of the Federal RCRA permit for RMI-Sodium Plant describes general requirements for a Corrective Measures Study Plan (called a Corrective Measures Plan in the permit). U.S. EPA policies have been refined since the RMI permit was issued in 1987, and a general Scope of Work has been developed for CMS plans. This Scope of Work can be tailored to site-specific conditions, but variations from the Scope of Work should be explained in the CMS Plan. The Scope of Work is included in Enclosure III of this document.

A CMS Plan, following the attached Scope of Work, is due to the U.S. EPA within sixty (60) days of receipt of this letter. Implementation of the plan is required within sixty (60) days of U.S. EPA approval of the CMS Plan.

Per the agreement made at the May 9, 1990 meeting, and subsequently confirmed by a letter from the USEPA to RMI (May 18, 1990), Task 1A of the CMS Scope of Work and a plan for completing Task 1B would be prepared and are due to the USEPA by June 29, 1990. The revised Health and Environmental Assessment (Section 7.0) will also be included in this submittal. The CMS report, however, will not be prepared until results of the additional site investigation described in Attachment 1 are received and approved by the USEPA.

ATTACHMENT 1

RECOMMENDED SUPPLEMENTAL INVESTIGATION  
RMI SODIUM PLANT  
ASHTABULA, OHIO



## ATTACHMENT 1

### RECOMMENDED SUPPLEMENTAL INVESTIGATION RMI SODIUM PLANT ASHTABULA, OHIO

Based upon the results of the RFI and review of USEPA's comments, a supplemental investigation is proposed for the RMI Sodium Plant site. A detailed Work Plan for this investigation will be submitted after approval by the USEPA of the revised RFI report. This Work Plan will be submitted as an amendment to the June 1987 Work Plan. The supplemental investigation will consist of the following tasks:

#### TASK 1: ACID TANK INTEGRITY TESTING

An integrity assessment will be performed on the sulfuric acid neutralization tank system. The sulfuric acid neutralization system is part of the NPDES treatment system at the RMI Sodium Plant. This assessment will determine if the tank system has potential for causing releases.

#### TASK 2: DEEP WELL WATER LEVELS

Water level measurements will be collected in all deep wells (4D, 5D, 7D, 9D, and 11D) because water levels had not fully recovered in several bedrock wells during the RFI. The water level data will be used to further assess the piezometric surface of the bedrock groundwater and direction of bedrock groundwater flow.

#### TASK 3: EASTERN BOUNDARY CHARACTERIZATION

Based upon the results of the RFI, further investigation of the area east of the wastewater treatment ponds is warranted. This study will include the following:

- Installation of 2 to 3 temporary piezometers to further define groundwater flow characteristics in this area. These piezometers will be shallow (less than 10 ft deep) and will be located between the wastewater treatment ponds and the off site drainage ditch located to the east of the ponds.
- Installation of at least two staff gages in the eastern drainage ditch to better define surface water flow characteristics in this area. In addition, the information will be used to determine the relationship between surface water and groundwater in this area.
- Installation of 1 to 3 monitoring wells to define groundwater flow patterns and assess groundwater quality. The wells will be installed between the wastewater treatment ponds and the off site drainage ditch located to the east of the ponds and will be completed within the glacial till (less than 15 ft deep).

- Water levels will be measured in all proposed and existing wells, piezometers, and staff gages, and a site-wide groundwater contour map will be constructed.
- Groundwater and surface water will be sampled in the eastern boundary area and analyzed for priority pollutant metals and cyanide. This information will better define water quality in the area.

#### TASK 4: TEMPORARY PIEZOMETER ABANDONMENT

All existing and proposed temporary piezometers will be abandoned following the conclusion of Tasks 1, 2 and 3.

#### TASK 5: PREPARATION OF SUPPLEMENTAL INVESTIGATION REPORT

A Supplemental Investigation Report will be prepared, as a stand-alone document, and will incorporate the findings of Tasks 1 through 4. This report will be submitted to the USEPA and approved prior to issuance of the CMS report.



ATTACHMENT 2

SURFACE WATER AND SEDIMENT  
SAMPLE DESCRIPTIONS



Pond Water Samples - 01/31/89

<u>Sample Number</u>	<u>Depth of Water (ft)</u>	<u>Sample Depth (ft)</u>	<u>Remarks</u>
PW-1 A	2	near pond bottom	Collected 4ft from bank; sample green, chlorine odor
PW-1 B	12	6	Collected 6ft from bank sample green, chlorine odor
PW-2 A	1.5	near pond bottom	Collected 3ft from bank sample green, chlorine odor
PW-2 B	--	--	--
PW-3 A	0.7	near pond bottom	Collected 3ft from bank
PW-3 B	5	2.5	Collected 5ft from bank
PW-4 A	5	2.5	Collected 4ft from bank
PW-4 B	14	7	Collected 5ft from bank; water very clear
PW-5 A	7	3.5	Collected 6ft from bank
PW-5 B	1.5	near pond bottom	Collected 4ft from bank
PW-6	Field Blank		
PW-7	Duplicate of PW-3		

All samples analyzed for TDS, pH, conductivity, major ions (no chemical preservation required); primary drinking water metals (preserved with nitric acid); and total organic carbon (preserved with sulfuric acid). All pond water samples were collected in plastic containers.



Pond Sediment Samples - 01/31/89

<u>Sample Number</u>	<u>Sample Location</u>	<u>Sample Description</u>
PS-1A	Collected 4ft from bank	Fine sediment with fine gravel
PS-1B	Collected 6ft from bank	Fine sediment with fine gravel
PS-2A	Collected 4ft from bank	Fine grey-white precipitate with fine to coarse gravel and clay
PS-2B	--	Fine grey-white precipitate with fine to coarse gravel and clay
PS-3A	Collected 10ft from bank	Very silty, little gravel; sediment is several ft deep
PS-3B	Collected 6ft from bank	Very silty, little gravel
PS-4A	Collected 4ft from bank	Sediment terraced at steep slope to bottom; very silty, little gravel
PS-4B	Collected 5ft from bank	Very silty, little gravel
PS-5A	Collected 6ft from bank	Fine sediment
PS-5B	Collected 4ft from bank	Fine sediment
PS-6	Duplicate of PS-3	

All pond sediment samples were analyzed for primary drinking water metals, pH, percent solids, and volatile solids (no chemical preservation required; collected in plastic jar)

Ditch Water Samples - 02/01/89

<u>Sample Number</u>	<u>Sample Description</u>
DW-A	Located near SW corner of landfill berm in N-S ditch, ~20 ft W. of above-ground pipeline, ~40 ft N. of fence line, 20 ft N. of bend in ditch. Water is 2-4 in. deep, ditch width ~4 to 8 ft; brown-grey sediment, somewhat gravelly bottom. Observable flow to the south
DW-B	Located north of landfill in ditch perpendicular to main ditch, 150' from plant access road. Little water, no observable flow; ditch overgrown with grass. White-grey silty sediment w/ reddish sediment in center. Water is 3 to 4 in deep; ditch is 8 ft wide, white precipitate floating on surface
DW-C	Located ~40 ft from road near water tower in E-W portion of ditch, near staff gage #5. Water is ~4 in. deep, flowing west. Sediment is light in center w/ reddish-orange (iron oxidized) streaks. Grey-white precipitate floating on surface
DW-D	Located ~50 ft SE of center water tower column, between water tower and abandoned pond. Ditch is 8 in. deep, 6 ft wide, grassy. Bottom of ditch is brown sediment and detritus; slow flow to the west. Area in general is flat lowland and marshy



Ditch Water Samples (continued) - 02/01/89

<u>Sample Number</u>	<u>Sample Description</u>
DW-E	Located SE corner of landfill, along fenceline, ~40ft SW of SW corner of abandoned pond and 30ft from fence to railroad tracks. No ditch, stagnant water ~3 in. deep and 10 ft x 60 ft area. Little sediment, bottom is grassy with detritus. Bright orange-red (iron oxidized) deposits in sediment.
DW-F	Located 10 ft south and 8 ft west of well 15. No true ditch and no flow; some low areas with stagnant water ~2 in. deep. Bottom is grassy with little sediment.
DW-G	Located 25 ft E of staff gage #2, 10ft N of fenceline, SW of the SW corner of landfill. Staff gage #2 is located where ditch flows under fence and off RMI property. Sampled ~7 ft W (downstream) of culvert located underneath railroad tracks which originates from off site. Stream is ~4 ft wide; water 2-6 in deep. No vegetation, silty clay sediment on bottom. Water is flowing, some suspended particles
DW-H	Distilled water blank
DW-I	Duplicate of DW-G
DW-J	Duplicate of DW-C

Ditch Water Samples (continued)

All ditch water samples were analyzed for pH, TDS, conductivity, major ions (no chemical preservation required); barium, cadmium, lead (preserved with nitric acid); and total organic carbon (preserved with sulfuric acid). Samples DW-E and DW-G were also analyzed for priority pollutants: pesticides, PCBs, base neutrals (no chemical preservative required; collected in amber glass jar); phenol (preserved with sulfuric acid, collected in boston round); priority pollutant metals (preserved with nitric acid); cyanide (preserved with sodium hydroxide); 601 scan (no chemical preserved required; collected in 40 ml glass vial); 602 & 603 scans (preserved with hydrochloric acid; collected in 40 ml glass vial).



Manhole Water Samples - 02/01/89

For MHW-1, -2, and -4, used small drill-powered centrifugal pump to sample. Primed but ends of sample tube with distilled water before each sample. Water-level too low to use drill-powered pump in MHW-5. Activated permanent pump installed in manhole and sampled discharge pipe to pump.

MHW-1	Located near SW corner of Pond 1
MHW-2	Located near SE corner of Pond 2
MHW-3	Distilled water blank
MHW-4	Located near Pond 4
MHW-5	Located near Pond 5
MHW-6	Duplicate of MHW-2

All manhole water samples were analyzed for TDS, pH, conductivity, major ions (no chemical preservation required); primary drinking water metals (preserved with nitric acid); and total organic carbon (preserved with sulfuric acid). All manhole water samples were collected in plastic containers.



MAY 18 1990

5HR-13

CERTIFIED MAIL: P707 061 639  
RETURN RECEIPT REQUESTED

Richard L. Mason, Director  
Environmental Affairs  
RMI Company  
P.O. Box 269  
1000 Warren Avenue  
Niles, Ohio 44446

RE: RCRA Facility Investigation (RFI) Report  
RMI - Sodium Plant  
OHD 000 810 242

Dear Mr. Mason:

This letter is to confirm the agreement made at our meeting of May 9, 1990, regarding revised deadlines for submitting a response to the U.S. EPA's comments on your facility's RFI report. Completion of Task I.A of the CMS Scope of Work, and a plan for completing Task I.B. are due June 29, 1990. A response to the rest of the U.S. EPA's comments on the RFI report, including a plan for additional RFI sampling, is due June 12, 1990.

If you have any questions, please contact me at (312) 886-6198.

Sincerely,

Francine P. Norling  
Environmental Scientist

cc: Ed Lim, OEPA-CO

5HR:13:NORLING:bd:05/18/90:6-6198

Mason-RMI

RCRA PERMITS	TYP.	AUTH.	IL. CHIEF	IN. CHIEF	MI. CHIEF	MN/WI CHIEF	OH. CHIEF	RPB CHIEF	O.R. A.D.D.	WMD DIR
INIT. DATE	05/18/90	5/18/90								



MAY 18 1990

5HR-13

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5HR:13:NORLING:bd:05/18/90:6-6198

Mason-RMI



RMI M+g 5/9/90

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Laura Hodges  
Mike Miller  
Rick Mason  
William Liebe

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